

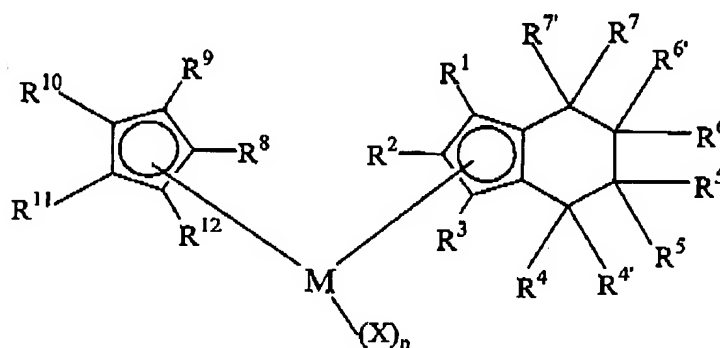
Application No. 10/828,953
 Docket No. 2003U013.US
 Reply to Office Action Dated 01/07/2005

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method of producing polyethylene a copolymer of ethylene and 1-hexene in a fluidized bed gas-phase reactor, wherein as the mole ratio of 1-hexene to ethylene is varied in the reactor between 0.015 to 0.05, the density of the resultant polyethylene changes by less than 5 % and the I_2/I_1 varies from 10 to 150, the method comprising:
 combining in the fluidized bed gas-phase reactor ethylene and 1-hexene ~~at least one α -olefin selected from C_3 to C_{10} α -olefins~~, an activator, and a metallocene catalyst compound to produce a polyethylene; wherein the metallocene catalyst compound is selected from:



wherein M is a Group 4 atom; X is a leaving group; n is an integer from 0 to 3;
 and

R¹ to R¹² are independently selected from the group consisting of hydrides, halogens, hydroxy, C₁ to C₆ alkoxys, C₁ to C₆ alkenyls, and C₁ to C₁₀ alkyls, provided that the tetrahydroindenyl is substituted; and

~~characterized in that when the comonomer is 1-hexene, and the mole ratio of 1-hexene to ethylene combined is varied between 0.015 to 0.05, the density of the resultant polyethylene changes by less than 5 % and the I_2/I_1 varies from 10 to 150.~~

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2. (Original) The method of Claim 1, further characterized in that the I_{21}/I_2 of the polyethylene varies from 15 to 100.
3. (Original) The method of Claim 1, wherein R^1 to R^{12} are groups selected from the group consisting of hydride and C_1 to C_{10} alkyls.
4. (Original) The method of Claim 1, wherein R^1 to R^{12} are groups selected from the group consisting of hydride and C_1 to C_5 alkyls.
5. (Original) The method of Claim 1, wherein R^1 to R^4 and R^7 to R^{12} are groups selected from the group consisting of hydride and C_1 to C_{10} alkyls, and R^5 , R^5' , R^6 , and R^6' groups are hydride.
6. (Cancelled)
7. (Original) The method of Claim 1, characterized in that when the mole ratio of 1-hexene to ethylene combined is varied from 0.02 to 0.05, the density of the resultant polyethylene changes by from less than 2 %.
8. (Original) The method of Claim 1, further characterized in that when the mole ratio of 1-hexene to ethylene combined is varied from 0.02 to 0.05 the amount of methyl groups per 1000 carbon atoms of the polyethylene produced therein is from less than 20.
9. (Original) The method of Claim 1, further characterized in that when the mole ratio of 1-hexene to ethylene combined is varied from 0.02 to 0.05 the amount of comonomer incorporated into the polyethylene produced therein ranges from less than 12 wt% of the total weight of the polyethylene.
10. (Original) The method of Claim 1, wherein the activator and metallocene catalyst compound are supported on a carrier material.

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11. (Original) A polyethylene produced by the method of any one of Claims 1 through 10 having an I_{21}/I_2 value of from 10 to 300, an M_w/M_n of 1.9 to 6, and a density of from 0.88 to 0.97 g/cm³.

12-22 (Cancelled)